

Mechanical Integrity

- Written procedures
- Training
- Inspections and testing
- Corrective actions
- Fabrication/installation of new equipment
- Maintenance materials and parts

Written Procedures



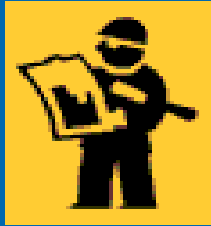
- Shut down & start up and/or isolation procedures for each specific task. (LOTO)
- Training requirements & methods to assure that training is adequate. (testing)
- Inspection/testing procedures addresses needed frequency & operational tolerances.
- Methods for assuring that new equipment or modifications to existing equipment are suitable for the process.

Inspection Practices

- Follow recognized and generally good engineering practices for inspections and testing.
 - Manufactures recommendations
 - Industry standards (ASME, NFPA, IIAR, Etc.)
 - Prior operating experience

Inspection Frequency

- Ensure frequency of inspections and tests consistent with applicable manufacturers' recommendations, good engineering practices, and prior operating experience.
 - Hourly
 - Daily
 - Monthly
 - Annually
 - **Manufactures recommendations**



Inspection Documentation

➤ Document each inspection with

- date
- name of the person who performed inspection
- serial number or other identifier of equipment
- description
- results

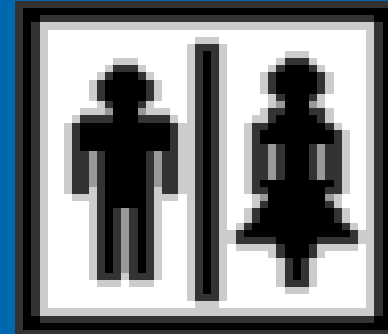
Documentation Format

- Meets 29 CFR 1910 and 40 CFR 68
- Simple to maintain but captures all of the necessary information
- Accountability for both the inspection/test completion and the documentation of the results
- Corrective action (when needed) and documentation tied to the inspection report.

Documentation Formats

Complexity

- Routine checklist
 - Hourly task
 - Simple items
 - Little training required to execute
- Complex checklist
 - Hourly or less
 - All items can be critical
 - Requires extensive training



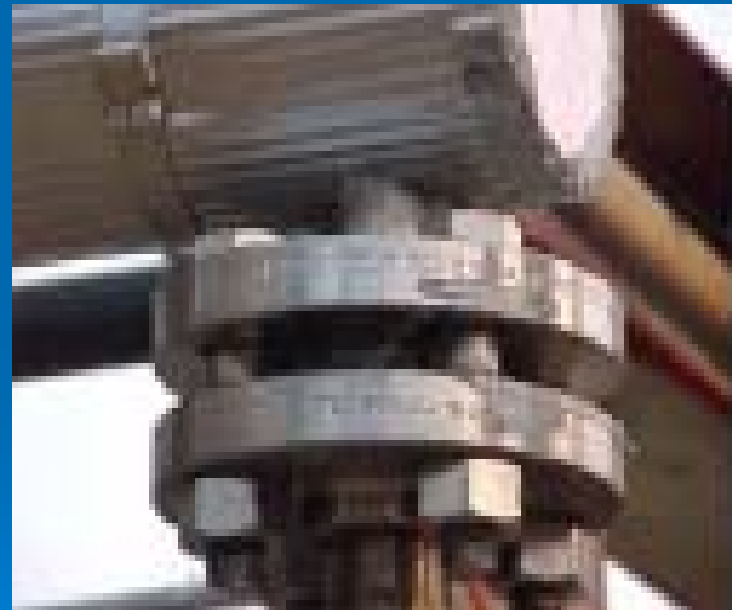
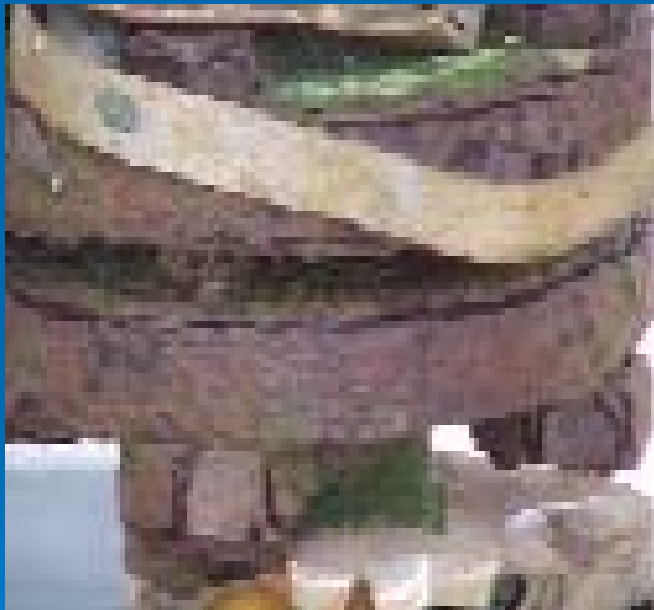
Inspection Identified Equipment Deficiencies

- The owner or operator shall correct deficiencies in equipment that are outside acceptable limits (defined by the process safety information in Sec. 68.65) before further use or in a safe and timely manner when necessary means are taken to assure safe operation.

Which valve will operate as intended?



Two Styles of Maintenance



Quality assurance

- In the construction of new plants and equipment, the owner or operator shall assure that equipment as it is fabricated is suitable for the process application for which they will be used.

- Appropriate checks and inspections shall be performed to assure that equipment is installed properly and consistent with design specifications and the manufacturer's instructions.
- The owner or operator shall assure that maintenance materials, spare parts and equipment are suitable for the process application for which they will be used.